

# *Kelliella elegantula* sp. nov., First Record of the Genus from British Columbia, Canada (Bivalvia: Kelliellidae)

by

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**Abstract.** *Kelliella elegantula* sp. nov. is proposed for a specimen taken in 1760 m near Triangle Island, British Columbia. It is the first record of the genus from British Columbia. Survey of the genus reveals a uniform conchology, but two anatomical types, suggesting that abyssal and hadal species be separated from the shallow-water species.

The genus *Kelliella* Sars, 1870 (= *Kellyella* Fischer, 1887, *nom. null.*), includes 14 species of small and usually deep-water bivalves. The type of the genus is *K. abyssicola* Sars, 1870, which occurs in the northeast Atlantic Ocean from Norway to West Africa and the Mediterranean Sea in 40 to 1200 m. The species was soon synonymized with *Venus*(?) *miliaris* Philippi, 1844, a Tertiary fossil of Italy. This was confirmed by comparison of topotypes with living material from Norway (ODHNER, 1960). The genus clearly belongs to the order Veneroida. The hinge is feeble and probably neotenous, and lateral teeth are absent. Usually assigned to the superfamily Arcticea Newton, 1891, which conclusion is supported by the gross anatomy, particularly the gill, and structure of the alimentary canal, which is basically similar to that described in *Glossus humanus* (Linnaeus, 1758) by OWEN (1953) and reviewed by PURCHON (1987). The shell structure of *K. miliaris* is entirely aragonitic, with a poorly differentiated outer layer and a thin complex crossed-lamellar inner layer. This structure is similar to some representatives of the Glossacea and Arcticea (TAYLOR *et al.*, 1973). The genus is placed in the family Kelliellidae Fischer, 1887, together with several extinct Eocene and Oligocene genera that are only doubtfully related, and two living Indo-Pacific genera that on conchological grounds can only be doubtfully included in the family.

All the species of *Kelliella* are small to minute and generally confined to abyssal and hadal depths. The conchological characters are remarkably uniform, but significant

anatomical differences suggest that those species with a single pallial fusion and a greatly hypotrophied gill outer demibranch, typified by the type of the genus, may be separated at the generic level from the deep-water species with inhalant and exhalant apertures, and only slightly

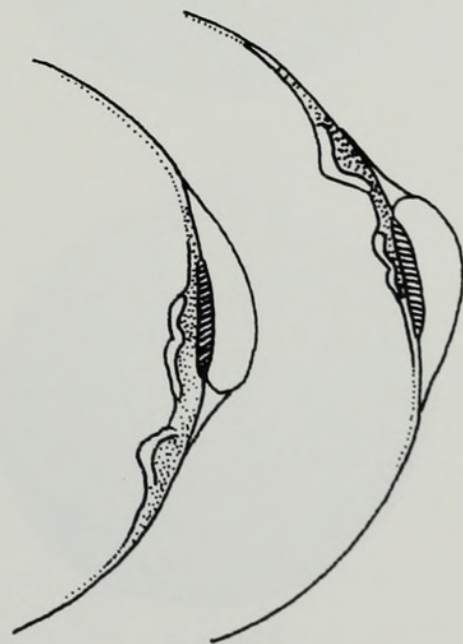


Figure 1

*Kelliella elegantula* Bernard, sp. nov. Interior view of right and left hinge.



Table 1  
Living species of the genus *Kelliella*

Species	Location	Depth (m)
* <i>Callocardia</i> (?) <i>adamsi</i> E. A. Smith, 1885	Northeast Pacific	4410
* <i>Callocardia</i> (?) <i>atlantica</i> E. A. Smith, 1885	Sierra Leone	1860
† <i>Vesicomya brunni</i> Filatova, 1969	Kermadec Trench	9000
† <i>Kelliella elegantula</i> sp. nov.	Northeast Pacific	1760
† <i>Kelliella galathea</i> Knudsen, 1970	Eastern Pacific	3570
<i>Kellyella goesi</i> Odhner, 1960	West Indies	360–540
† <i>Kelliella indica</i> Knudsen, 1970	Indian Ocean	4350
<i>Venus</i> (?) <i>miliaris</i> Philippi, 1844	Northeast Atlantic	50–1200
* <i>Kelliella nakayamae</i> Habe, 1953	Pleistocene Japan	
* <i>Kelliella nitida</i> Verrill, 1885	Northwest Atlantic	3800
† <i>Callocardia</i> (?) <i>pacifica</i> E. A. Smith, 1885	Mid north Pacific	5394
* <i>Diplodonta pilula</i> Dall, 1881	Caribbean Sea	570
† <i>Kelliella sundaensis</i> Knudsen, 1970	Sunda Trench	6900
† <i>Kelliella tasmanensis</i> Knudsen, 1970	Tasman Sea	4400

\* Anatomy not known.

† Species with separated inhalant and exhalant apertures.

reduced outer demibranchs. The necessity of this course will be established when the anatomy of more species has been surveyed.

*Kelliella elegantula* Bernard, sp. nov.

(Figures 1–3)

**Original description:** Shell small, globose, thin and hyaline, subequilateral, equivalve. Commissure without gape. Umbones prosogyrate, prominent. Anterior dorsal margin arched. Surface with equidistant concentric rounded riblets, interspaces narrow and deep. Riblets prominent on ventral part of disc and crenulating the inner shell surface. Periostracum polished, thin, and adherent. Lunule wide and demarcated by an incised line. Escutcheon absent. Ligament short, opisthodetic, external but sunk in groove.

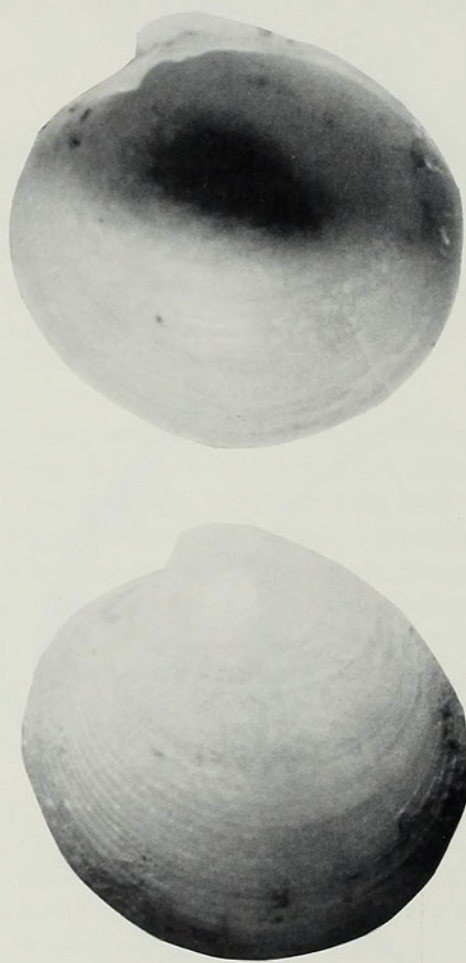


Figure 2

*Kelliella elegantula*. Photograph of exterior of left valve and interior of right valve. Holotype specimen length 3.9 mm (BCPM 979-5440).

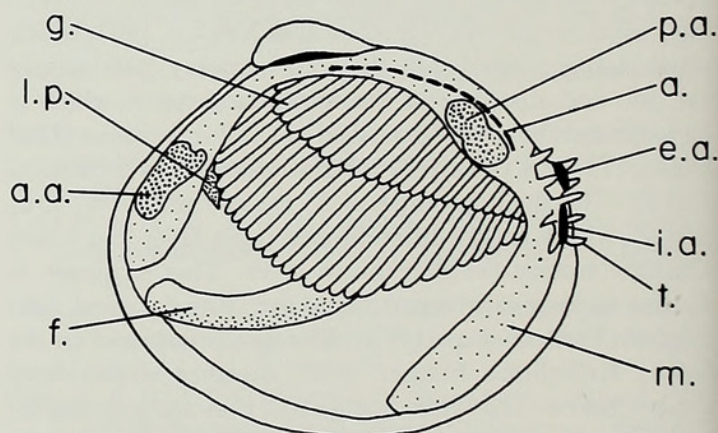


Figure 3

Gross anatomy of *Kelliella elegantula* with mantle partially removed, as seen from the left side. Abbreviations: a., anus; a.a., anterior adductor muscle; e.a., exhalant aperture; f., foot; g., gill; i.a., inhalant aperture; l.p., labial palp; m., mantle; t., tentacle.



Hinge plate narrow and delicate, dentition feeble. Each valve with short triangular anterior pseudocardinal tooth and longer reflexed posterior pseudocardinal tooth. Adductor muscle scars subequal and rounded. Pallial line entire, obscure.

**Type locality:** West coast of Triangle Island, British Columbia at 50°54.5'N, 130°12.0'W in 1760 m. Collected by D. B. Quayle, Fisheries & Ocean Station 63-211 on 11 September 1964.

**Holotype:** The dimensions of the holotype are length 3.9, height 3.7, width 2.4 mm. The unique type is deposited in the British Columbia Provincial Museum, Victoria, Canada (BCPM 979-5440).

**Etymology:** The specific name is derived from the Latin *elegans*, meaning "choice" and "beautiful," referring to the elegance of the shell.

**Anatomy:** The specimen was fixed in alcohol and dried. After rehydration the following anatomical observations could be made. Exhalant aperture with short collarlike siphon. The inhalant aperture a simple slit. Apertures with 6 thin tentacles. Foot digiform, with obscure byssal groove, but no appearance of a functional byssus. Gills large and thickened, flat, heterorhabdic, inner demibranch larger. Labial palps small, upper pair joined to form an overhanging oral hood. Stomach globular, with large dorsal hood and extensive gastric shield. Major and minor typhlosoles prominent. Mid-gut and style pouch conjoined. Ducts to the digestive diverticula in three groups. Intestine direct, passing through the ventricle of the heart. Anus projecting as a long simple papilla.

**Comparisons:** The new species is readily distinguished from the other Pacific Ocean representatives by the more robust dentition, similar to that of *Kelliella miliaris* as described by CLAUSEN (1958), but it differs from that species by the separate inhalant and exhalant apertures, the absence of hypertrophy of the inner mantle fold of the pedal opening, the more nearly equal demibranchs, the digiform foot lacking a heel, and the absence of the bundle of cilia on the anal papilla. The new species is superficially similar to *K. goesi* (based on illustration, holotype probably in the Naturhistoriska Museet, Sweden) but lacks the characteristic external punctae, and the sculpture is more subdued. There is some resemblance to *K. galathea* (holotype in the Zoological Museum, University of Copenhagen) which lacks the triangular anterior pseudocardinal tooth, and the shell is thinner and more inflated.

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